AMENDMENTS TO THE CLAIMS

Please amend the claims as they currently stand so that they are in accord with the following listing of the claims:

1. (currently amended) A pacing system for pacing multiple chambers of the heart and sensing signals from the myocardium of multiple chambers of the heart which will allow the verification of a cardiac evoked response resulting from a delivered charge to the heart tissue comprising:

a preamplifier system circuit having at least two inputs for sensing signals to be picked up by at least two electrodes adapted to pick up the sensing signals, the preamplifier[[s]] further comprises

a) a DC coupled buffer amplifier first stage, comprising at least one buffer amplifier for each of the at least two electrode inputs,

b) a switch matrix following the buffer amplifiers allowing sensing of the differential between any two of the at least two electrode inputs,

c) a next stage of differential amplifiers providing gain to either the differential between any two electrode inputs or one input to ground, and

d) a next stage filter stage.

2. (previously presented) The pacing system according to claim 1 wherein the filter stage comprises at least one of

d1) a first high pass filter with or without gain, having an input capacitor, an output and at least one switch, said switch being capable of discharging charges transferred across

the input capacitor allowing the output of the high pass filter to be reset to analog ground,

d2) a next stage first low pass filter with or without gain, having an input and at least one switch to disconnect the input from the circuit,

d3) a next stage second high pass filter with or without gain, having an input capacitor, an output and at least one switch capable of discharging the charges transferred across the input capacitor allowing the output of the high pass filter to be reset to analog ground, and

d4) a next stage second low pass filter with or without gain, having an input and an output.

3. (previously presented) The pacing system according to claim 2, wherein said second low pass filter comprises at least one switch to disconnect the input or the output or both.

4. (previously presented) A pacing system for pacing multiple chambers of the heart and sensing signals from the myocardium of multiple chambers of the heart which will allow the verification of a cardiac evoked response resulting from a delivered charge to the heart tissue, the pacing system having a pacing circuit capable of pacing multiple chambers of the heart, the pacing system comprising:

a preamplifier system having:

a) a DC coupled buffer amplifier stage,

b) a switch matrix following the buffer amplifiers allowing sensing of the differential between any two electrodes implanted in the heart,

c) a next stage of differential amplifiers providing gain to either the differential between any two electrode Inputs or one Input to ground, and

d) a next stage wideband bandpass filter with gain, having an output and internal switches capable of discharging charges transferred across the Input allowing the output of bandpass filter to be reset to analog ground.

5. (currently amended) The pacing_system according to claim 4, wherein

the pacing system further comprises

e) a next stage after the filter stage or the wideband bandpass filter, said next stage being either an analog to digital converter or a narrowband bandpass filter with associated threshold detector under the control of a microprocessor and control logic, and

f) pacing circuits capable of pacing multiple chambers of the heart with the ability to provide programmable pacing time, a programmable first autoshort time, a programmable sensing time window, [[u]]and a programmable second autoshort time.

6. (previously presented) The pacing system according to claim 5, comprising a pacemaker (PM) having a housing and a header fixed to the housing, both the housing and the header are made from biocompatible material, the header including a least one connector for an electrode lead, the connector being connected to protection diodes, followed by electromagnetic interference filtering capacitors, and a current limiting resistor, which is connected to a switch forming a blanking switch to be opened during the delivery of a pacing pulse, the blanking switch being connected to the preamplifier system.

7. (previously presented) The pacing system according to claim 6, wherein the buffer amplifier is a FET or similar type ultra-high input impedance amplifier.

8. (previously presented) A method for operating the pacing system according to claim 7 for verifying the capture of the myocardium, the method including the following steps:

a) delivering a pacing pulse of programmable amplitude and pulse width,

b) performing a first autoshort for a programmable time length,

c) unblanking the amplifier system after the first autoshort and sensing an evoked response signal during a programmable sensing time window,

d) amplifying the sensed signal by a preamplifier system,

e) sending the amplified signal to the narrowband bandpass filter to allow passage of frequencies contained in the evoked response,

f) comparing the signal from the band pass filter to a threshold value, and, if the signal exceeds the threshold value, generating a capture detected signal, and

g) blanking the amplifier system at the end of the programmable sensing time window, and invoking the second autoshort for a programmable length of time.

9. (previously presented) The method according to claim 8, wherein the pacing pulse to be delivered in step a) is programmed to be a monophasic pacing pulse.

10. (previously presented) The method according to claim 9, including the step of:

h) delivering another pacing pulse of either larger amplitude, longer time or both in delivered at a programmable delay after the second autoshort time, if a capture was not detected in the previous steps.

11. (currently amended) A method for operating the pacing system according to claim 7 for determining the presence of an evoked response of the myocardium, the method including the following steps:

a) delivering a programmable stimulating monophasic pulse, followed by a programmable autoshort period which is shorter than the time between the end of the pace pulse and the beginning of an evoked response signal,

b) [[O]]opening the switches in front of the buffer amplifiers during the delivering of the pulse and the autoshort period, and closing the switches in front of the buffer amplifiers immediately at the end of the autoshort period,

c) at the same time during the delivering of the pulse and the autoshort period opening all blanking switches and setting all amplifier inputs in the filter stages to system ground,

d) closing the matrix switches of the switch matrix and placing sensed signals at the inputs of the differential amplifiers,

e) closing the switch connecting the output of the differential amplifier to the fast high pass filter,

f) discharging the charge transferred across the high pass capacitor to system ground, The output of the first high pass is then switched to a low pass filter,

g) switching the signal to the next high pass filter,

h) discharging the charge transferred across the high pass capacitor to system ground,

i) sending the output of the second high pass stage to the final low pass filter,

j) switching the output of the final low pass filter, to the bandpass filter stage, and

k) connecting the outputs of the bandpass filters to programmable threshold detectors.

12. (currently amended) The method according to claim 11, further comprising the steps of:

l) observing a programmable detection time window for the presence of an evoked response signal triggering at least one threshold detector of the threshold detectors,

m) opening all blanking switches at the end of the detection window, and

n) invoking another autoshort to insure no net charge delivered to the myocardial tissue over times.

13. (previously presented) The method according to claim 11, further comprising the step of delivering a backup pulse at a programmable time delay after the end of the window, if no signal was detected during the detection window.

14. (previously presented) The pacing system according to claim 1, wherein the pacing system further comprises:

e) a next stage after the filter stage or the wideband bandpass filter, said next stage being either an analog to digital converter or a narrowband bandpass filter with associated threshold detector under the control of a microprocessor and control logic, and

f) pacing circuits capable of pacing multiple chambers of the heart with the ability to provide programmable pacing time, a programmable first autoshort time, a programmable sensing time window, und a programmable second autoshort time.

15. (previously presented) The pacing system according to claim 1, comprising a pacemaker (PM) having a housing and a header fixed to the housing, both the housing and the header are made from biocompatible material, the header including a least one connector for an electrode lead, the connector being connected to protection diodes, followed by electromagnetic interference filtering capacitors, and a current limiting resistor which is connected to a switch forming a blanking switch to be opened during the delivery of a pacing pulse, the blanking switch being connected to the preamplifier system.

16. (previously presented) The pacing system according to claim 1, wherein the buffer amplifier is a FET or similar type ultra-high input impedance amplifier.

17. (previously presented) A method for operating a pacing system for verifying the capture of the myocardium, the method including the following steps:

a) delivering a pacing pulse of programmable amplitude and pulse width,

b) performing a first autoshort for a programmable time length,

c) unblanking the amplifier system after the first autoshort and sensing an evoked response signal during a programmable sensing time window,

d) amplifying the sensed signal by a preamplifier system having a DC coupled buffer amplifier first stage connected to a switch matrix,

e) sending the amplified signal to the narrowband bandpass filter to allow passage of frequencies contained in the evoked response,

f) comparing the signal from the band pass filter to a threshold value, and, if the signal exceeds the threshold value, generating a capture detected signal, and

g) blanking the amplifier system at the end of the programmable sensing time window, and invoking the second autoshort for a programmable length of time.

18. (previously presented) A method for operating a pacing system for determining the presence of an evoked response of the myocardium, the method including the following steps:

a) delivering a programmable stimulating monophasic pulse, followed by a programmable autoshort period which is shorter than the time between the end of the pace pulse and the beginning of an evoked response signal,

b) opening switches connected to the input of buffer amplifiers during the delivering of the pulse and the autoshort period, and closing the switches connected to the input of the buffer amplifiers immediately at the end of the autoshort period,

c) at the same time during the delivering of the pulse and the autoshort period opening all blanking switches and setting all amplifier inputs in the filter stages to system ground,

d) closing the matrix switches of the switch matrix and placing sensed signals at the inputs of the differential amplifiers,

e) closing the switch connecting the output of the differential amplifier to the fast high pass filter,

f) discharging the charge transferred across the high pass capacitor to system ground, The output of the first high pass is then switched to a low pass filter,

g) switching the signal to the next high pass filter,

h) discharging the charge transferred across the high pass capacitor to system ground,

i) sending the output of the second high pass stage to the final low pass filter,

j) switching the output of the final low pass filter, to the bandpass filter stage, and

k) connecting the outputs of the bandpass filters to programmable threshold detectors.

19. (previously presented) The method according to claim 18, further comprising the steps of:

l) observing a programmable detection time window for the presence of an evoked response signal triggering the threshold detector,

m) opening all blanking switches at the end of the detection window, and

n) invoking another autoshort to insure no net charge delivered to the myocardial tissue over times.

20. (previously presented) The method according to claim 18, further comprising the step of delivering a backup pulse at a programmable time delay after the end of the window, if no signal was detected during the detection window.